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Medical Research in the Navy

Medical research in our increasingly important Navy is a major component of the over-all activities of the Department of Defense in research in general and medical research in particular. Maintenance of the health of personnel in peace and war has broad implications as to coordination of the man and the weapons systems, fitness for operations in a wide variety of environments, prevention of disease and injury, diagnosis, and therapy. In some ways this parallels civilian medicine and is accordingly valuable to medical practice as a whole, but many requirements of the military are peculiar to the Armed Forces and need special approaches. However, civilian medicine and military medicine are and should be complementary. The Navy is especially concerned because of its medical support of operations on the sea, under the sea, and in the air, as well as the requirements of Marines on land. The center of the medical effort is the Bureau of Medicine and Surgery, where, under the general direction of the Surgeon General, the Research Division is the focus of this particular kind of medical work.

The Medical Department conducts its research (a) in specially designated laboratories, (b) in the naval hospitals, and (c) through the medium of contracts negotiated by the Office of Naval Research with universities and nonprofit agencies. The largest of the laboratories is the Naval Medical Research Institute, a command in the National Naval Medical Center in Bethesda, Md. Other laboratories of direct operational importance are situated in the Submarine Base at New London, Conn.; the Marine Base at Camp Lejeune, N. C.; Naval Medical Research Unit No. 1 at the University of California; Naval Medical Research Unit No. 2 at Taipeh, Formosa; Naval Medical Research Unit No. 3 in Cairo, Egypt; and Naval Medical Research Unit No. 4 at Great Lakes, Ill. These laboratories are under what is called the management control of the Bureau of Medicine and Surgery. In addition, there are laboratories over which the Bureau exercises technical control in collaboration with other Bureaus of the Navy. These include the School of Aviation Medicine at the Naval Air Station, Pensacola, Fla.; the Aviation Medical Acceleration Laboratory at Johnsville, Pa.; the Air Crew Equipment Laboratory at the Naval Base in Philadelphia; the Naval Radiological Defense Laboratory in the Naval Shipyard at San Francisco; the Navy Mine Defense Laboratory at Panama City, Fla.; and the Experimental Diving Unit in the Naval Gun Factory, Washington, D.C. Furthermore, extensive research is conducted under the auspices of the Dental Division of the Bureau, particularly in the Naval Dental School at Bethesda and the Naval Training Center at Great Lakes, Ill.; that of Bainbridge, Md., and that of San Diego, Calif.

A general program is established by the Bureau of Medicine and Surgery and, on this basis, broad general missions are assigned to laboratories which in turn initiate projects in support of the mission and these are correlated in the Research Division of the Bureau. In this way the operation of the program

is under constant supervision and precautions are taken to avoid unnecessary duplication of effort.

Research in physiology connected with the operational requirements of the Navy is conducted in various places, but it is especially emphasized at the Naval Medical Research Institute. Microbiology is studied in various laboratories, particularly at Naval Medical Research Unit No. 4, Great Lakes, Ill.; in the Naval Biological Laboratory at the Naval Supply Center, Oakland, Calif.; at Cairo, Egypt, and at Taipeh, Formosa. Pharmacology is studied especially in the Naval Medical Research Institute, but when it is considered that this includes such things as irradiation injury, traumatic injury, burns, and endocrine glands, it is evident that the studies must be widespread in the laboratories and in the hospitals. The same may be said of pathology.

Psychology, psychiatry, and related fields are of the greatest importance in the selection of personnel for such special acitivities as aviation and submarine operations. Motivation and successful operation must be analyzed with great care. Furthermore, there is a necessity for understanding neuropsychiatric casualties which occur in naval personnel with a view to prevention and correction.

Clinical investigation in naval hospitals is undertaken by those members of the hospitals' staffs who have special problems in diagnoses and management which require special attention. In addition, it is now planned to establish a Clinical Investigation Center in one or more naval hospitals where not only do those especially assigned to the centers have fine opportunities for research, but these opportunities are also extended to various members of the hospitals' staffs including surgeons and related specialists.

Dental research covers investigations of dental caries, periodontal disease, influence of enzymes, the relationship of oral conditions to health, and technical advances in the treatment of oral disease as well as studies of prosthetics. The use of anorganic bone in oral grafting gives great promise.

The Office of Naval Research was established on a broad basis to cover research in the Navy, such as that in ordnance, munitions, electronics, et cetera, as well as work in the biosciences. The work in the biosciences is generally of a basic or supporting type. Thus, contracts may be executed with universities and nonprofit agencies so that gaps in knowledge necessary to the solution of operational problems in the service may be overcome.

Naturally, the widespread investigative program is correlated with other activities of the Bureau of Medicine and Surgery. This is particularly true in reference to the Preventive Medicine Division, but applies also to the Professional, Statistical, and other divisions.

Without attempting to detail all the advances made in medical research, a few examples may be mentioned of interest to the surgical profession. One of these has to do with the preservation of blood. By contract between the

Protein Foundation and the Navy, a program is now under way at the U.S. Naval Hospital, Chelsea, Mass., to study the long-term preservation of glycerolated blood at low temperatures. A Cohn fractionator will be installed to study the practical aspects of long-time storage of the red cell mass and deglycerolization for transfusion. Currently, it is known that the erythrocyte mass can be preserved for much longer periods than is true of the usual acid-citrate-dextrose (ACD) treated blood. Originating at Naval Medical Research Institute, the Navy supports a study of preservation of blood by means of freezing in liquid nitrogen. This has not yet been so thoroughly investigated as the biomechanical separation, but when methods of sterile operation and satisfactory thawing are worked out, there is promise that blood can be stored more or less indefinitely with satisfactory survival of erythrocytes after transfusion.

In collaboration between the Naval Hospital and the Naval Medical Research Institute at Bethesda, Md., work with freeze-dried bone has progressed satisfactorily. At the present time, this tissue bank is situated in the Naval Hospital and sufficient amounts of bone are prepared to supply all the needs of the Navy. The method can be adapted to work in civilian institutions. This tissue bank also deals with the preservation of arterial segments, of fascia, and of cadaver skin which can be used after proper preparation for homografting. The work is progressing extremely well and gives promise of many new developments.

Navy surgeons have worked extensively with cardiopulmonary functions, and, on the basis of the work in two special laboratories, namely, those of the Naval Hospital, St. Albans, N. Y., and the Naval Hospital, Portsmouth, Va., have progressed not merely in the technique of pulmonary resections and in cardiac surgery, but have also been able to study the ultimate results of their procedures.

The Navy operates a Prosthetics Laboratory at the Naval Hospital in Oakland, Calif. The work in the laboratory has been directed toward the production of prostheses for amputees, and this has been extended to include congenital deficiencies of extremities. These studies are of investigative nature and when a prosthesis appears to be satisfactory the manufacture is turned over to commercial houses. Nevertheless, new biological structure replacement materials are constantly sought. Of particular importance in this connection is the rehabilitation of the patients. Their pride in the use of the prostheses and in their ability to perform numerous intricate tasks is outstanding.

During World War II, officers at the Naval Medical Research Institute investigated the blast injuries of crew members thrown into the sea by enemy action and exposed to underwater blast when immersed. This had an important bearing on the management of those who were rescued. The armored vest was developed at the Naval Medical Field Research Laboratory at Camp Lejeune and has had significant influence on incidence and types of wounds

in the field in Korea. Similarly, the Navy boot is important in preventing frostbite and injury by land mines. The Air Crew Equipment Laboratory and that at Johnsville have studied acceleration and deceleration, the latter of direct importance to surgical treatment. The study of blast effects at the Navy Mine Defense Laboratory will be of surgical significance in the recognition and management of injuries so acquired.

It is not my intention to give the impression that surgeons are interested only in items of direct surgical importance. The new calorimeter at the Naval Medical Research Institute represents the greatest advance in calorimeters in the past half century. The human disorientation device at Pensacola is unique in the study of orientation of pilots. Valuable studies of cholera, brucellosis, typhus fever, amebiasis, and other diseases carried out in the unit in Cairo, Egypt, have led to certain improvements in diagnosis and treatment. Further work on exotic diseases will be conducted in Formosa. Continued investigations of acute upper respiratory disease at Great Lakes, Ill., give promise of prevention of these disorders and such sequels as rheumatic fever and nephritis. At San Francisco, the prevention and treatment of irradiation injury are studied intensively. To detail all the investigation in progress requires more than an editorial. However, enough has been said to indicate that the Medical Department of the Navy is dedicated to "combat readiness" and "success in battle."

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(Editorial: H. T. Karsner, Medical Research in the Navy: Arch. Surg., 74: 203-205, February 1957)

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Policy

The U.S. Navy Medical News Letter is basically an official Medical Department publication inviting the attention of officers of the Medical Department of the Regular Navy and Naval Reserve to timely up-to-date items relative to medicine, dentistry, and allied sciences. The amount of information used is only that necessary to inform adequately officers of the existence and source of such information. The items are neither intended to be nor are they susceptible as a substitute for any item or article in its original form. All readers are urged to obtain the original of items of particular interest to the individual.

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Management of Cleft-Lip and Cleft-Palate Patients

"The Cleft Lip-Cleft Palate syndrome is probably the most common serious congenital anomaly amenable to surgical correction." On birth certificates in the State of Pennsylvania for 1954, the three most frequently reported congenital anomalies were club feet, clefts of the lip or palate, and finger-polydactylism.

This article presents a broad picture of management of patients with clefts of the lip and palate, not particularly for those with specialized interest in this field, but rather for physicians who are not so closely associated with these problems.

Conditions arising in the neonatal period are discussed along with questions that parents are likely to ask. Next, the treatment of cleft lips is considered briefly, and then the various aspects of cleft palate management considered in more detail. A plan of treatment is outlined for the over all care of these patients and the care of the "complicated case" is discussed.

In this way, physicians who might be responsible for part of the care of these patients will have a comprehensive idea of the problems which arise from their patient's cleft lip or palate. Also, physicians who are called upon to console anxious patients, friends, or relatives may be able to give a clearer picture of the over all problem and they are less likely to contradict their colleagues.

It is hoped that the term "harelip" will be discarded and the more scientific word "cleft" used in referring to these deformities of the lip and palate. This is desirable not only from a scientific point of view, but also because of the stigma which has become attached to the use of the colloquial term.

An unrepaired cleft of the lip or palate is a horrifying sight, particularly to an emotionally labile mother. It is a terrible blow to parents who have built up hopes and joys for many months, and it gives rise to all sorts of doubts, fears, and worries. Probably, they have never seen such a condition and they wonder why it should happen to them, what they might have done wrong, what could have been done to prevent it, whether they should ever have any more children, whether this is the price of having married someone much older, and eventually, what they should tell their child when he or she grows up and contemplates marriage. These questions are probably all answered best by the plastic surgeon. However, it is usually the obstetrician, the pediatrician, or the family physician who knows the parents most closely. They have already gained the confidence of the parents and their advice and consolation are depended upon to a great extent. Conflicting information is damaging, so joint discussions with the plastic surgeon can be helpful to all.

The authors point out to parents that they have probably never before seen an unoperated cleft-lip or palate. Few nonmedical people have, but they should be told that this is a fairly common condition and that a great deal can be done about it. They should feel that there are well planned steps

for its correction and that they can expect considerable improvement. Realistically, they should know that, even with the best results, perfection will not be reached.

Parents should know that the complete cause is unknown. Falsehoods should be contradicted. They should be told that a cleft is not the result of wrongdoing, maternal impressions, superstitions, or anything that could have been avoided during pregnancy. Clefts in humans are not caused by any known communicable disease; the age of the parents does not seem to be a factor; and the only established causal influence is heredity. Discussion of experimentally produced clefts is usually not mentioned.

If there is no history of cleft lip or cleft palate in the family, the authors usually tell the parents that there is little likelihood of their having subsequent children with the same deformity. With a negative family history, the chances of a patient with a cleft having children with the same deformity is obviously greater than if he did not have the cleft, but is still very small. With a positive history of clefts occurring in the family, the incidence of clefts in subsequent children is much greater.

Closure of the cleft lip is purely a plastic surgical procedure and the time for operation is usually decided upon by the plastic surgeon in consultation with the pediatrician. Good surgery is essential for good results. Irreparable and conspicuous damage can be done by the surgeon who is inexperienced in this type of work. Furthermore, these are not emergency procedures requiring operation within 24 hours of birth; the child can feed well without surgical closure. With modern transportation and medical centers, an experienced plastic surgeon should be within the practical and economic reach of patients in almost every part of this country.

The decision concerning how and when to close a cleft palate is not a simple one. This is usually a decision for the plastic surgeon to make and the majority of cases will probably get the best results by plastic surgical closure. Many surgically closed cleft palate patients develop good speech and have a minimum number of dental problems. These patients are seldom seen by dental colleagues. Others need general dentistry, orthodontia, and replacement of missing or deformed teeth. On the other hand, the dental specialists see a great many patients in whom surgery was ill-advised, ill-timed, or badly executed. These "surgical cripples" present a tragic picture. Many have had 8, 10, and 12 operative procedures, and are left with severely deformed upper jaws, persistent perforations, and scarred short immobile "soft" palates.

In recent years, largely as a result of attention directed toward this tragic group of patients, cleft palate clinics have been developed for their care. The Lancaster Cleft Palate Clinic in Lancaster, Pa., for instance, is a nonprofit organization in which a team approach is used to very good advantage. The fields of plastic surgery, orthodontia, prosthodontia, pedodontia, speech therapy, psychology, pediatrics, otolaryngology, growth,

and radiology are at one time or another concerned with the care of these patients—some more so than others and each with its limitations.

Through the combined and coordinated efforts of those interested in cleft-lip and cleft-palate patients and an increasing amount of scrutiny in evaluating the various results, considerable progress has been made in this field. More plastic surgeons are getting better specialized training in cleft-lip and cleft-palate surgery. Specialized speech therapists, orthodontists, and prosthodontists are becoming available and are better equipped to handle these cases. Patients have more numerous facilities at their disposal on both private and ward levels, in state-run, nonprofit, and private institutions. Clinical and laboratory investigation is probably at an all-time high. In 1952, a society was organized which is called the American Association for Cleft Palate Rehabilitation. It present membership of over 400 includes men and women who are certified in many diverse fields of associated interests. They contribute a great deal and are trying to understand each other's problems and accomplishments.

As a result, good care is usually available for the cleft-lip and cleft-palate patient. Fewer "surgical cripples" are being seen and the usual case has better function and appearance, social adjustment, and economic independence. (Randall, P., The Management of Cleft-Lip and Cleft-Palate Patients: Am. J. Med. Sci., 233: 204-217, February 1957)

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Acute Hemorrhagic Gastrorrhea

Acute dilatation of the stomach is a serious complication which develops after a wide variety of operations and other trauma. However, study of the relevant literature shows that acute gastric dilatation is an ill-defined entity. In fact, it results from a variety of disorders, three of which are of outstanding importance, namely, mechanical intestinal obstruction, adynamic ileus, and hemorrhagic gastrorrhea.

In all of these disorders, the volume of vomitus or short-tube aspirate is excessive and, unless fluid and electrolyte losses are energetically replaced parenterally, severe and even fatal constitutional symptoms rapidly supervene. In present day clinical practice, such severe systemic effects should be, and generally are, anticipated and prevented.

The authors suggest that as a sole diagnosis, "acute dilatation of the stomach" is generally inadequate; the clinician's thinking should reach out to the cause and variety of the gastric dilatation confronting him. The differentiation of mechanical obstructions with backing up of contents and dilatation of the proximal bowel is of the first importance. This article attempts to go further and to differentiate acute hemorrhagic gastrorrhea—an active hypersecretive process—from gastroduodenal and more extensive degrees

of ileus in which they suggest that passive pooling of secretions and ingesta is responsible for the large volumes of aspirate. This distinction is made from the physical and chemical properties of the aspirate.

That the volume of material aspirated through an indwelling tube must be a function of that secreted by the related segment of the digestive tract, is clear. It will be smaller when the secretions are propelled quickly away from the tube tip by active peristalsis or reabsorbed into a healthy entero-hepatic circulation.

Three disorders are considered which, if unrelieved, lead to rapid dilatation of the stomach: (1) acute intestinal obstruction; (2) paralytic ileus where the bulk of all digestive secretions is poured into the stomach and duodenum and, in ileus, these and swallowed air, food, and drinks cannot be moved on and are not absorbed; and (3) acute hemorrhagic gastrorrhea in which gastric distention may follow the vast outpouring of gastric juice.

The authors stress, but do not see the need to discuss mechanical obstruction of the intestine with damming up of contents when peristalsis weakens and the proximal loops dilate. Second, there is paralytic ileus which occurs usually in association with sepsis or low-grade peritonitis after operations. Paralytic dilatation affects the gastrointestinal tract over a variable extent and to different degrees. However, its chief impact is seen in the gastroduodenal area where there is pooling of secretions and accumulation of all swallowed material. Large volumes of aspirate may be recovered, but there is no firm evidence that the gastroduodenal secretions are increased in amount in paralytic ileus. The aspirated material is mixed in character, bile-stained, greenish or brown, and is foul-smelling.

The authors suggest that acute hemorrhagic gastrorrhea is a clinico-pathologic entity which should be separated from paralytic ileus in any of its forms. It is an active process involving intense hypersecretion by the gastric mucosa. All findings agree with this. Instead of the usual post-operative inhibition of secretion, there is gastrorrhea.

The increased aspirate is not due to a failure of propulsion with consequent pooling because, as it develops, there is a switch to a purely gastric pattern in the biochemical analysis. It is almost odorless, not feculent, and black, not bile-stained or brownish.

Acute hemorrhagic gastrorrhea is defined as a grossly abnormal pouring out of secretions by the stomach occurring after traumas, including operations not necessarily involving the peritoneal cavity, and associated with general malaise, wakefulness, upper abdominal distention, and discomfort, hiccup, and rapidly progressive hypochloremic alkalosis. Its pathogenesis is unknown, but vagal inhibition cannot be a factor. Further elucidation of its mechanism and its correct management demand that it be differentiated from simple postoperative ileus. (Rundle, F. F., Cass, M. H., Robson, B., Acute Hemorrhagic Gastrorrhea - One Type of Acute Dilatation of the Stomach: Surgery, 41: 254-266, February 1957)

Congenital Anomalies of the Esophagus

Congenital anomalies of the esophagus result from a fault in development at about the fourth week in the life of the embryo. A groove in the ventral wall of the primitive pharynx deepens and converts into the laryngotracheal tube. This tube is in intimate relation to the upper part of the foregut, the lengthening of which forms the esophagus. Incomplete separation of the trachea and esophagus and failure of recanalization of the esophagus result in (1) atresia of the esophagus with tracheoesophageal fistula, (2) atresia without tracheoesophageal fistula, and (3) tracheoesophageal fistula without atresia. Other anomalies of the esophagus are (1) reduplications of the esophagus, (2) paraesophageal cysts, and (3) diverticula.

Atresia of the esophagus should be suspected when a newborn infant drools excessively, chokes upon feedings, and has cyanotic episodes. The diagnosis can be confirmed by the inability to pass a catheter into the stomach and the visualization of a blind upper pouch on roentgenogram after putting opaque media (never barium) into the upper esophagus. The presence of air in the stomach and intestines as shown by the roentgenogram establishes the fact that a tracheoesophageal fistula is present. The absence of air suggests that there is no fistula between the lower esophagus and trachea, but does not rule out this possibility. Tracheoesophageal fistula without atresia should be suspected when a newborn infant has severe coughing episodes when fed. The fistula may be demonstrated by roentgenograms taken after opaque media has been placed in the esophagus with the infant in the prone position.

Atresia of the esophagus with tracheoesophageal fistula in which the lower esophagus enters the posterior wall of the trachea makes up 90% of the anomalies of this type.

Atresia of the esophagus without tracheoesophageal fistula is variable in the length of the upper esophageal pouch. The lower esophagus may vary from an atretic cord of tissue to a sharply tapering esophagus ending blindly in the posterior mediastinum adherent to, but not communicating, with the trachea. A variant of this anomaly is the congenital esophageal web located at the mid-esophagus.

Tracheoesophageal fistula without atresia is represented by a well developed esophagus which is intimately adherent to the trachealis muscle along the lower portion of the trachea with a fistulous opening above the bifurcation. In rare instances, two fistulas may be present with the upper segment as well as the lower segment communicating with the trachea.

Reduplications of the esophagus and paraesophageal cysts may not be symptom producing. Often, their presence is indicated by an abnormal shadow seen on a roentgenogram of the chest. Their surgical removal usually can be easily accomplished by employing a transpleural approach to the posterior mediastinum. Epiphrenic esophageal diverticula are considered by most authors to be acquired diverticula of the pulsion type. One

patient, treated surgically by the authors for this type of diverticulum, had one brother who also had a similar diverticulum removed surgically and another brother who was the father of two infants, both born with atresia of the esophagus. The authors' experience with this family and the history often obtained of symptoms going back to early childhood lead to the belief that these diverticula may be congenital in origin. They are easily excised surgically using a transpleural approach.

Congenital anomalies of the esophagus in which atresia or a fistulous connection are present are urgent surgical problems. More than half of these infants can be salvaged by direct end-to-end anastomosis of these two segments of the esophagus or by delayed substitution procedures when the former is not feasible. Associated anomalies incompatible with life, aspirational episodes causing pulmonary infections and complications due to faulty healing of the anastomosed esophagus are the greatest obstacles encountered in the surgical management of these infants. Other esophageal anomalies present surgical problems less urgent in nature and more easily managed. (Shaw, R. R., Paulson, D. L., Congenital Anomalies of the Esophagus: Am. J. Surg., 93: 196-203, February 1957)

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Allergic Reaction to Salk Poliomyelitis Vaccine

This report is a clinical and statistical survey of the allergic reactions occurring in a group of school children who received the Salk poliomyelitis vaccine during the spring and fall trials in Kenosha, Wis., in 1955. Kenosha is an industrial city of about 55,000 population.

One section of the group, 3970 children, ranging in age from 4 to 9, received the first and second injections from volunteer physicians in the special school clinics in cooperation with the Kenosha Health Department. In the second section, there were 370 patients including 8 pregnant mothers and 362 children ranging in age from 6 months to 14 years who received their injections as office patients of the author.

This report seeks to supplement the meager literature on this subject, to determine the incidence of allergic reactions in a considerable portion of the school population of this city, and to suggest measures to reduce such reactions.

Careful follow-up and analysis of the 490 reactions in the trial clinic group revealed that 304 "reactions" occurred following the first Salk vaccine injection in 1686 cases and that 186 occurred in the second Salk vaccine trial group of 1294 cases. Interviews with the mothers and observation of the children revealed that 205 of the "cold" group, i.e., those patients with the syndrome of cough, nasal dripping, or blocking, sneezing, and fever, belonged to the infectious APC (adenoid, pharynx, conjunctival) group of

diseases. These were probably coincidental to the injections or in children in the early stages of infection. This was so in spite of the fact that temperatures were taken in children with obvious "colds" prior to inoculation. Such children were eliminated at the time—as were all patients with more than one degree of fever. The 205 children of the "cold" group also had other associated symptoms, i.e., chills and fever in 29 cases, nausea and vomiting in 14 cases, faintness or weakness in 13 instances, anorexia in 21 cases. Eliminating the "cold" group, the sore arm group, and the miscellaneous group of transitory muscle aches as nonallergic reactions, there were 106 patients who fitted the pattern of true allergic reactions in the 3970 children, an incidence of 2.51%. Likewise, children with a history of allergy or with a definite family background of allergy, were eliminated and treated in special clinics or by their own family physician.

Interviews with the mothers of those children in the free trial clinics who gave any type of reaction revealed that 309 (63%) of these patients had received penicillin either orally or by injection previous to the first Salk inoculation. Of the 86 patients with a definite allergic pattern, 12 had received penicillin prior to the Salk inoculations.

In the office group of 370 patients who varied in ages from 2 to 26 years (including 8 pregnant females from 18 to 26 years of age), there was a total of 89 reactions in 34 patients; several of whom gave multiple symptoms. Of this group, 26 had "colds" with rhinitis, cough, and fever within 72 hours after the injections, 9 had very sore arms, 10 had nausea and vomiting. Also, in this group, there were 4 patients who had severe true allergic reactions (with urticaria or angioedema), one of these also had respiratory infection with cough and fever, and 2 had nasorespiratory symptoms, wheezing and conjunctival irritation. The true incidence of allergic reactions in this group was 1.09%. Among the office group, there were 56 children under allergic management and another 38 with a family history of allergy. All of the allergic reactors in the office group had had penicillin prior to the Salk inoculations.

Because of the proved value of the Salk vaccine in the prophylaxis of poliomyelitis, allergic children should not be denied such protection even at the risk of reactions. However, by reducing the amounts of vaccine given—that is, by giving fractional doses of the vaccine at more frequent intervals—such reactions could be modified, reduced, or halted altogether. Consequently, the author reduced each dose of the Salk vaccine to 0.1 to 0.25 cc. with 4-day to 7-day intervals, without skin testing except in known ultrasensitive cases.

In the manner of Simons and others who used small amounts of antihistaminics along with their penicillin injections, the author added 0.25 to 0.5 cc. of injectable antihistamine in the same syringe with the Salk vaccine for all children who were known allergics, who had allergy histories, or allergic backgrounds. Although several excellent workers, especially

Sheldon, et al., believe that the inclusion of antihistaminics does not reduce the delayed reactions of penicillin, the author's previous experience has been similar to that of Simon, et al. Several thousand penicillin-treated patients have been followed who have received antihistaminics along with their antibiotic injections with a definite decrease in the number of allergic reactions. The rate of 1.09% of allergic reactions in the present control series as compared to the reaction rate in the carefully controlled trial clinic series does suggest that reactions can be reduced by the addition of small amounts of antihistaminics to the Salk vaccine, the careful screening of allergics prior to the administration of the Salk vaccine, and the giving of fractional doses. Because the antigenic tissue fractions were in such minute amounts as compared to the amount of penicillin, it seems most likely that the reactions which did occur were penicillin reactions. (Lipman, W. H., Allergic Reaction to the Salk Poliomyelitis Vaccine: GP, XV, 94-98, February 1957)

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Treatment of Mumps Orchitis

Epididymo-orchitis occurs as a complication in the course of mumps in 18 to 43% of postpubertal males. Not only is gonadal involvement accompanied by severe local pain and systemic discomfort, but testicular atrophy is a sequel in about one-half of the cases and sterility can result, although this is probably unusual. Of the various prophylactic measures that have been tried in males with epidemic parotitis, the administration of diethylstilbestrol has given encouraging results and early injection of y-globulin prepared from mumps convalescent serum has resulted in definite reduction in the incidence of orchitis. The treatment of established orchitis, however, has remained unsatisfactory. Antibiotics, pooled plasma, convalescent serum, estrogens, and surgical decompression have been irregularly effective. At present, the usual regimen consists of analgesic and antipyretic drugs with local application of cold and the use of various suspensory devices.

The remarkable antiinflammatory properties of the adrenal steroids as well as their efficacy in alleviating a variety of "febrile toxemic" states suggested that these hormones might be useful in the management of mumps orchitis.

The administration of cortisone, prednisone, or corticotropin to 23 patients with severe mumps orchitis was followed by rapid defervescence and reduction of testicular swelling and pain. No untoward effects of these hormones upon the course of the infection were noted. The desirability of wider clinical trial of this type of treatment is pointed out. The occurrence of hepatic dysfunction of varying degree in several patients in this group is discussed in relation to the paucity of published data on involvement of the liver in mumps. (Petersdorf, R. G., Bennett, I. L. Jr., Treatment of Mumps Orchitis with Adrenal Hormones: Arch. Int. Med., 99:222-232, February 1957)

Pleuropulmonary Tularemia

Pulmonary involvement in tularemia is a pathologic entity which has been found to occur more commonly than was formerly believed and to have a high morbidity and mortality unless specific therapy is instituted early. Prompt diagnosis is, therefore, of the utmost importance, but is often difficult. Although the roentgen findings of tularemic pneumonia are not specific, they may suggest the diagnosis before the serum agglutinations become clinically significant or before the causative organisms can be isolated.

Tularemia is produced by the organism, P. tularensis, and is usually transmitted to man by the handling of infected wild rabbits and rodents, ingestion of the meat of infected wild rabbits, and the bites of infected ticks. The diagnosis is usually confirmed by isolation of the organisms or the rising serum agglutinin titres against P. tularensis. This serum agglutinin reaction is the most specific of all the serum agglutination tests and is clinically significant at titres of 1 : 160.

The three main clinical forms of tularemia are: (a) ulceroglandular, (b) oculoglandular, and (c) typhoidal. In each of these forms, pneumonia may occur, secondary to a bacteremia. A primary pulmonic form of the disease is also seen, but is rare. It is usually the result of inhalation of the organisms by laboratory workers.

Although the roentgenologic findings in tularemic pneumonia are not specific, some of them may suggest the correct diagnosis before the development of serum agglutinins against P. tularensis which usually appear one to two weeks after inoculation. The significant findings in the present series were: (a) frequent widespread and bilateral involvement; (b) spherical configuration of the homogeneous infiltrate; (c) frequency of pleural reaction and effusion; (d) time required for resolution of pulmonary and pleural involvement following the clinical response.

The high incidence of pleural involvement in tularemia, as seen in this series, has been well documented. That pleural reaction often does not occur early in the course of the disease was likewise substantiated. The longer the condition persists untreated, the more frequent is pleural effusion; this may be the most significant finding in chronic cases.

Ivie has recently stressed the tendency of the pulmonary infiltration in tularemia to assume a spherical configuration. While the authors were not particularly impressed with the frequency of spherical lesions, they believe that their presence should suggest the diagnosis of tularemic pneumonia.

Bihss and Berland, in a review of 81 cases of tularemia, divided the roentgenologic manifestations of pleuropulmonary involvement into two basic types: (a) hilar lymphadenopathy, appearing in the earliest stages of the disease with subsequent retrograde extension through the lymphatics into pulmonary parenchyma and pleura, with the production of effusion seen more

commonly in the ulceroglandular or oculoglandular forms; (b) primary involvement of the pulmonary parenchyma with large homogeneous consolidations, but no evidence of hilar lymphadenopathy, more common in the typhoidal form. In the present series, it was not possible to make this distinction and the three cases showing hilar lymphadenopathy were all of typhoidal type. While two types of infiltration were recognized—stringy peribronchial infiltration and homogeneous areas of consolidation—both were frequently encountered in the same case and there was no correlation with the primary form of the disease. Peribronchial infiltration is believed to be the earliest roentgen manifestation of pulmonary involvement because, in some instances, it has been seen to progress to a lobular homogeneous consolidation.

Prompt antibiotic therapy not only has decreased the morbidity and mortality rates in tularemic pneumonia, but also has altered its roentgen aspects. Early investigators noted the resemblance of the more chronic forms to tuberculosis with a tendency to necrosis and cavitation. In the present series, not a single instance of resemblance to tuberculosis was encountered and in only one case was there evidence of cavitation which developed as the infiltrative lesion underwent resolution. Early diagnosis and specific therapy may also serve to abort almost completely the roentgenologic findings. (Dennis, J.M., Boudreau, R.P., Pleuropulmonary Tularemia - Its Roentgen Manifestations: Radiology, 68: 25-29, January 1957)

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Roentgenologic Diagnosis of Pulmonary Hypertension

The presence of pulmonary hypertension in mitral stenosis usually is determined by clinical means such as assaying the severity of dyspnea and orthopnea and by the accentuation of the second pulmonic sound. Further indirect evidence is afforded by right ventricular strain or hypertrophy patterns in the electrocardiogram or by the demonstration of right ventricular enlargement by roentgenography. Direct and quantitative estimation of pulmonary hypertension, however, must be achieved by cardiac catheterization or by direct pressures from the pulmonary artery. These procedures are not generally available, besides being somewhat complicated and hazardous for routine use.

Bearing these latter factors in mind, the authors believed that it would be useful to establish a more readily applicable method to determine the presence or absence of pulmonary hypertension. Such a method is described based on correlations between the width of the descending branch of the right pulmonary (hilar) artery in the teleoroentgenogram and the resting mean pulmonary artery pressures measured during cardiac catheterization.

The descending branch of the right pulmonary artery lies lateral to the right lower lobe bronchus. The width of the artery is measured in its upper

portion at right angles to the bronchus from the bronchus to the outer margin of the vessel. Comparison of the plain roentgenogram with selective pulmonary angiograms has shown excellent correlation in regard to the accuracy of this method.

Rarely, difficulties are encountered in measuring the width of the vessel. This may occur when a dilated right heart or left atrium projects to the right of and beyond the right lower lobe bronchus. The bronchus must then be looked for within the heart shadow or at times its course can be projected downward as a straight line from its proximal portion at the tracheal bifurcation. Overpenetrated roentgenograms or a slight right anterior oblique projection may bring out the bronchus highlight more clearly.

In this study, 105 patients with pure or significantly predominant mitral stenosis were evaluated. Roentgenograms of two-thirds of these were associated with decreased aeration of the lung parenchyma and about one-fifth showed narrowing of the tertiary pulmonary arteries which has been so aptly stressed by Campbell and by Davies in England.

Pulmonary artery pressures are available in these 105 patients, 77 by cardiac catheterization, and in 56 as recorded at the time of operation, by direct puncture of the pulmonary artery. The upper limit of normal mean pulmonary artery pressure is regarded as 15 mm. Hg. A mean pressure of 25 mm. or more is considered a significant elevation and is referred to as such. This is 70% above normal.

Of the 77 catheterized patients, 47 had right pulmonary artery width measuring 14 mm. or above. Forty-five of the 47 had resting mean pressures exceeding 25 mm. Hg, the other 2 had less significant elevations. All of the 41 patients with pulmonary artery widths of 15 mm. or more had significant pressure elevations.

A similar correlation was noted between pulmonary artery widths and pulmonary artery pressures performed at the time of operation by pulmonary artery punctures. With pulmonary artery widths of 14 mm. or more, 33 of 34 patients had pressures of 25 mm. Hg. or more. All of the 27 patients with widths of 15 mm. or more showed significant pulmonary artery pressure elevations.

Below 14 mm., pulmonary artery width level correlation is much less reliable. Thirteen of the 77 catheterized patients had neither increased right pulmonary artery width nor significantly increased pulmonary artery pressures. However, 17 others in this catheterized group showed significant pulmonary hypertension while their pulmonary artery widths were 13 mm. or less. Therefore, normal pulmonary artery widths might be associated with either normal or elevated pulmonary artery pressures.

A study is presented in patients with mitral stenosis correlating the width of the right descending pulmonary artery branch with pulmonary artery pressures. In such patients, roentgenographic demonstration of right descending pulmonary artery widths of 15 mm. or more is definitely associated

with significant pulmonary hypertension and at 14 mm., significant pulmonary hypertension is most likely present. A linear correlation between pulmonary artery widths and pulmonary artery pressure does not exist. (Schwedel, J. B., et al., The Roentgenologic Diagnosis of Pulmonary Hypertension in Mitral Stenosis: Am. Heart J., 53: 163-170, February 1957)

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The Diagnosis of Fetal Sex During Pregnancy

A great number of tests have been described for the purpose of diagnosing the sex of the fetus in utero. The authors have previously shown that a reliable diagnosis of sex can be made before birth by a study of the chromocenters in cells of the amniotic fluid, and since their original report, other works have appeared by Dewhurst, Fuchs and Riis, James, Makowski and associates, and Shettles, so that the reliability of the method is now well established.

The theoretic basis of the test is founded upon the difference in the sex chromosome constitution of normal males and females—males having the XY and females the XX sex chromosome constitution—and the ability to identify this difference morphologically by a study of the chromocenters in human tissues and, for this purpose especially, in the embryonic tissues and cells found in amniotic fluid.

The authors have made a detailed analysis of a series of cases showing the reliability of this method using amniotic fluid obtained at, or just prior to, delivery and, furthermore, using fluid obtained in the earlier months of pregnancy. The present article discusses the method of obtaining the fluid, its practicability, and the results obtained.

From these results, it may be concluded that from 16 weeks of pregnancy (or even a little earlier) by careful abdominal puncture, a reliable method of prenatal sex diagnosis is now available. Although amniotic fluid can be obtained by this method even at 12 weeks and a diagnosis possible, it is clinically more practicable between the fourteenth and sixteenth weeks of pregnancy.

With regard to the theoretic dangers involved in this procedure, it should be noted that in the earlier months of pregnancy (referring to the end of the fourth to the beginning of the seventh) there is a comparatively large amount of amniotic fluid surrounding a small mobile fetus. The authors have found that visualization of the placental position by the use of soft tissue roentgenography (practiced so successfully in the later months by Whitehead and others) can be done too in many early pregnancies, thus giving an idea of the relative position of fetus and placenta. The authors performed the test by this method after the successful performance of abdominal punctures for the purpose of tocodynamometry had been reported in over 600 cases by Alvarez and Caldeyro. The authors' cases also showed no by-effects.

The procedure of abdominal paracentesis of the pregnant uterus is by no means a new one and has been used for various purposes. The technique has been developed and precautions described. It should be noted that far wider bore needles have been used for this purpose than the authors found necessary when the procedure was used for recording the contractility of the uterus, and yet no ill effects were observed, no abortions, premature labors, or hemorrhages.

The procedure has been used, not only for the aspiration of amniotic fluid, but also for injecting substances into the amniotic cavity. The method of amniography was reported to be successful and complicated only by the toxicity of the contrast media injected. Amniography has even been said by Albano and Gallina, Cetroni and Azzariti, Granjon, and Kerr and Mackay, to enable the diagnosis in some cases of the fetal sex so that the use of paracentesis is not revolutionary for this purpose either. Recent reviews in connection with its use for sex diagnosis by nuclear sexing agree that amniotic fluid can be obtained by this method if reasonable care is exercised.

On the accuracy of the test, it has been questioned whether diagnosis is at all possible in cases of dissimilar twins in one amniotic sac. As pointed out in previous observations, analyzing the types of cells found in the amniotic fluid in the rare instances of such types of twinning, the suspicion of its existence may be raised by finding aggregations of cells with a male picture in one and a female picture in another. The incidence of hermaphroditism would appear to be too small to make an appreciable reduction in the percentage accuracy of the test.

In spite of the accuracy of this method for the prenatal diagnosis of sex, the relative lack of danger, and the fact that it can be carried out early in pregnancy, the authors do not propose its use as a procedure for the mother-to-be who is simply curious.

The possible application of the test for fetal sex on clinical grounds, however, seems to be feasible without the danger that many other well known medical methods are known to carry. There are known instances of sex-linked diseases in man, the symptoms of such diseases appearing in only one of the sexes. Abdominal puncture of the pregnant uterus with reasonable caution could be usefully applied in such selected cases in which the diagnosis of the sex of the embryo would enable the antenatal detection of the hereditary disorder.

Recent publications by Coombs and Edwards on blood grouping from epithelial cells and its possible application to the fetus in utero suggest other possibilities for the use of amniotic fluid in the antenatal detection of hereditary disorders—not only those that are sex-linked, but also those that are caused by autosomal genes. With further advances in these fields, there may be added importance to the practicability of aspirating amniotic fluid during pregnancy. (Serr, D. M., Sachs, L., Danon, M., The Diagnosis of Fetal Sex During Pregnancy: Surg. Gynec. & Obst., 104: 157-161, February 1957)

Prurigo of Hebra

This study was undertaken for the purpose of describing prurigo as observed in Egypt with particular reference to the general health and nutritional status of the patients and to determine whether the poor level of general health is a result of the disease or, conversely, whether the existence of the disease is secondary to malnutrition and general poor health.

Until 1868, the word "prurigo" was used as a synonym for "pruritis." In that year, the Viennese dermatologist Hebra distinguished it as a clinical entity from a large and confusing group of pruritic dermatoses which included eczema, pityriasis, icthyosis, and others. Many other types have been described, but this discussion concerns only the classic prurigo of Hebra.

Prurigo is a chronic disease of the skin characterized by intensely itching small pale papules which are deeply seated and most prominent on the extensor surfaces of the limbs. Beginning early in life, it is rare before the sixth month. It is usually accompanied by superficial lymph node enlargement and frequently eosinophilia.

The disease occurring in a mild form is known as prurigo mitis which is clearly differentiated from the severe form (prurigo ferox or agria) with respect to extent, number of papules, intensity of itching, and general constitutional reaction to the process. Prurigo invariably begins as a papular urticaria, recurring and gradually changing into the true papular prurigo which may last indefinitely. If the process begins as a mitis (the mild type) it remains as such, even though it subsides and recurs. If it begins as prurigo ferox (the severe form) it continues as the severe form throughout its remissions and exacerbations. Both forms of the disease continue to recur yearly throughout childhood and extend into adult life, although great improvement sometimes occurs in the late teens. A confirmed diagnosis is difficult before the second year inasmuch as the existence of the papulae, the presence of itching, and the chronicity are the essential diagnostic criteria.

The papule is the primary lesion of prurigo. Before it is visible, it is palpable under the skin. The patient, however, is already aware of its presence because of the intense itching. The papule later becomes visible as a small flesh-colored or reddish circular elevation about a millimeter in diameter. Scratching, occurring over a period of time, produces excoriation, crusts, lichenification, pigmentation, and scarring with frequent secondary infection. In the case of prurigo ferox, the papules and lichenification are predominant obscuring the urticarial element, although the intense itching persists. The skin takes on a permanently lichenified appearance.

Distribution of the prurigo lesions is typical whether the disease be prurigo mitis or ferox. The typical distribution, involves chiefly the extensor surfaces of the extremities, the extent of the involvement increasing distad. The flexures remain free with smooth normal skin, even with extreme

prurigo over the rest of the body. The incidence of involvement of the trunk is variable. When involved, the buttocks usually exhibit the lesions. Combined involvement of the abdomen and anterior chest is more frequently seen than involvement of the upper back.

In milder cases, the arms and legs may be the only involved parts of the body, but this is unusual. They are the last to clear and usually are the only parts to show lichenification. The face and neck are usually free of disease although the sides of the face, the forehead, and the ears often show a few papules.

Associated with the skin manifestations, lymph node enlargement is a constant finding. The axillary, inguinal, and epitrochlear nodes are large, soft, nontender, and do not suppurate. The enlargement is out of proportion to the extent of the skin changes and to the amount of secondary infection.

In addition, the patients show signs of poor general health, although there is no consistent physical finding or abnormality which can be pinpointed. Fatigue, listlessness, and anorexia are commonly observed.

Prurigo throughout the world is a disease of the underprivileged and the undernourished living at a low hygienic level. The present physical findings of retarded skeletal growth and signs of vitamin deficiency reflect a basic undernutrition while the laboratory findings of intestinal parasitism often accompanied by low serum albumin indicate the systemic nature of this disease. There was no correlation between the degree of eosinophilia and amount of skin involvement. The effect of improving the nutritional and general health status in a controlled series of prurigo will be interesting to observe. (Fox, M. A. V., et al., Prurigo of Hebra: NM 007 082.09.08, August 1956, Naval Medical Research Unit No. 4, Cairo, Egypt)

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Maximum Permissible Radiation Exposures to Man

A Preliminary Statement of the National Committee on Radiation Protection and Measurement

Since the publication of National Bureau of Standards Handbook 59 on Permissible Dose from External Sources of Ionizing Radiation, the National Committee on Radiation Protection and Measurement (NCRP) has continued the study and review of its recommendations, particularly with respect to genetic effects and the possible shortening of average life expectancy due to radiation exposure of a larger fraction of the population. The NCRP proposals resulting from these studies had an important influence on the decisions reached by the International Commission on Radiological Protection (ICRP) in Geneva in April 1956 which resulted in a general lowering of the maximum permissible accumulated dose (MPD) for occupational radiation exposures, as well as for exposures of the population as a whole.

These changes are in accord with the informal agreements reached by the ICRP in Stockholm in 1952.

The NCRP has now agreed upon the formulation of revised recommendations on maximum permissible doses which integrate the national and international views for practical application. The Committee is pleased to note that the findings of the ICRP are reinforced by the important information and data provided in the subsequent reports of the National Academy of Sciences and the British Medical Research Council.

The changes in the accumulated MPD are not the results of positive evidence of damage due to use of the earlier permissible dose levels, but rather are based on the desire to bring the MPD into accord with the trends of scientific opinion; it is recognized that there are still many uncertainties in the available data and information. Consideration has also been given to the probability of a large future increase in radiation uses. In spite of the trends, it is believed that the risk involved in delaying the activation of these recommendations is very small, if not negligible. Conditions in existing installations should be modified to meet the new recommendations as soon as practicable and the new MPD limits should be used in the design and planning of future apparatus and installations. Because of the impact of these changes and the time required to modify existing equipment and installations, it is recommended on the basis of present knowledge that a conversion period of not more than 5 years be adopted, within which time all necessary modifications should be completed.

Definitions. For the purposes of this preliminary statement, the following tentative definitions are given:

Controlled Area. A defined area in which the occupational exposure of personnel to radiation or to radioactive material is under the supervision of a radiation safety officer. (This implies that a controlled area is one that requires control of access, occupancy, and working conditions for radiation protection purposes.)

Workload. The output of a radiation machine or a radioactive source integrated over a suitable time and expressed in appropriate units.

Occupancy Factor. The factor by which the workload should be multiplied to correct for the degree of type of occupancy of the area in question.

RBE Dose. RBE stands for relative biological effectiveness. An RBE dose is the dose measured in rems. (This is discussed in the forthcoming report of the International Commission on Radiological Units and Protection)

MPD Recommendations for Occupational Conditions (Controlled Areas)

1. Accumulated Dose. The maximum permissible accumulated dose, in rems, at any age, is equal to 5 times the number of years beyond

age 18, provided no annual increment exceeds 15 rems. Thus, the accumulated MPD = 5 (N—18) rems where N is the age and greater than 18. This applies to all critical organs except the skin, for which the value is double.

2. Weekly Dose. The previous permissible weekly whole-body dose of 0.3 rem, and the 13-week dose of 3 rems when the weekly limit is exceeded, are still considered to be the weekly MPD, with the above restriction for accumulated dose.

3. Emergency Dose. An accidental or emergency dose of 25 rems to the whole body, occurring only once in the lifetime of the person, shall be assumed to have no effect on the radiation tolerance status of that person. (See National Bureau of Standards Handbook 59.)

4. Medical Dose. Radiation exposures resulting from necessary medical and dental procedures shall be assumed to have no effect on the radiation tolerance status of the person concerned.

MPD Recommendations for the Whole Population

5. The maximum permissible dose to the gonads for the population of the United States as a whole from all sources of radiation, including medical and other manmade sources, and background, shall not exceed 14 million rems per million of population over the period from conception up to age 30, and one-third that amount in each decade thereafter. Averaging should be done for the population group in which cross-breeding may be expected.

Recommendations for Internal Emitters

6. In controlled areas, the permissible radiation levels for internal emitters will conform to the general principles outlined above. Where the critical organ is the gonad or the whole body, the maximum permissible concentrations of radionuclides in air and water will be one-third the values heretofore specified for radiation workers. Where single organs other than the gonads are regarded as the critical organ, the present maximum permissible concentrations will continue. For individuals outside of controlled areas, the maximum permissible concentrations should be one-tenth of those for occupational exposures. (Other changes in the maximum permissible concentrations for radionuclides may be introduced because of additional information developed since the publication of National Bureau of Standards Handbook 52.)

Discussion of Revised Recommendations

7. The MPD for occupational exposure is based on the absence of detectable injury to the individual. It remains at its present level of

0.3 rem/week for the whole body. Where the dose in any week exceeds this value, a dose of 3 rems in 13 weeks may be accepted. The 13-week period may start at the beginning of the calendar quarter or the beginning of the week during which the permissible weekly dose was exceeded.

8. The rules given in Handbook 59 will be continued for operational and administrative purposes, but some of the rules will be modified by provisions related to an average yearly limitation of occupational exposure to external sources of ionizing radiation of 5 rems to the blood-forming organs, gonads, and lenses of the eyes, and of 10 rems to the skin. The use of "5 rems" in the statement of the revised rules is for the purpose of design and administration. The critical limitation will be that defined for the total accumulated dose in paragraph 1 above.

9. If a person's occupational exposure is documented or otherwise known with reasonable certainty, he may be permitted to use his reserve exposure in accordance with paragraphs 1 and 2 above. In all other cases, he shall be assumed to have received his maximum accumulated dose as indicated in paragraph 1 above.

10. It is considered that, with the current and proposed low levels of occupational exposure, it is presently not necessary to make special allowance for medical exposure in conjunction with occupational exposure. This consideration may later become important. The effects of medical exposures have long been considered by this Committee to be the responsibility of the attending physician; it is his responsibility to evaluate medical radiation exposure in relation to the health of the individual. (See National Bureau of Standards Handbook 59.)

11. In the determination of the population dose in the vicinity of radiation sources, proper consideration should be given to occupancy factor and to workload. The exposure of individuals outside of controlled areas may be integrated over periods up to one year.

12. While at the moment it is not feasible to determine the average exposure for the population with any reasonable accuracy, the adoption of some figure is necessary for planning purposes. For the immediate future, it may be assumed that the total integrated RBE dose received by all radiation workers will be small in comparison with the integrated RBE dose of the whole population. Furthermore, persons outside of controlled areas, but exposed to radiation from a controlled area, constitute only a small portion of the whole population. Therefore, if this small portion is assumed to receive yearly an average per capita dose of 0.5 rem, the total dose to the whole population from man-made radiations is not likely to exceed 10 million rems per million of population up to age 30. (This assumes a dose of 4 million rems per million of population over this age period from background radiation.)

(National Bureau of Standards, Technical News Bulletin, February 1957)

Special Weapons Orientation Course

Background. BuPers Notice 1540 of 4 December 1956 granted the Bureau of Medicine and Surgery a limited number of quotas to be utilized for the training of Medical Department personnel, for the Special Weapons Orientation Course given at the Fleet Training Center, Norfolk, Va., from January through December 1957. These quotas were assigned to the Commandants of the First, Third, Fourth, Fifth, Sixth, Eighth, Ninth, Tenth, Fifteenth, PRNC, and SRNC Districts.

Information:

A. Mission
   a. To familiarize officers of the Fleet with the functioning, capabilities, and limitations of atomic weapons
   b. To present the capabilities and limitations of atomic weapons
   c. To outline a minimum of delivery techniques and capabilities and/or planning considerations
   d. To present the future developments and improvements that can be expected in the field of atomic weapons

B. Length - Four days - Tuesday through Friday

C. Prerequisites. A technical background will not be a prerequisite for attendance. All officers attending shall be Lieutenant (CAPT USMC) or above. Waivers of rank must be obtained from CincLantFlt. Reserve officers shall have no less than one (1) year of obligated service remaining.

D. Clearance Requirements. Personnel must possess one of the following security clearances:
   1. AEC "Q" clearance
   2. Interim Top Secret
   3. Top Secret military

   In order to regulate the attendance of civilian employees, it is required that approval be obtained from the Chief of Naval Operations prior to sending civilians to the Special Weapons Orientation Course.

E. Orders. a. Orders should direct personnel to report to the Officer-in-Charge, Special Weapons School, Building NH-45, Commander-in-Chief, U.S. Atlantic Fleet Headquarters, Naval Base, Norfolk, Va., for temporary duty under instruction, Course WO-, for a period of about four (4) days.

b. Government quarters and messing are available in the Commander-in-Chief, U.S. Atlantic Fleet BOQ.
c. Since BOQ and the Special Weapons School are in the same area, government transportation will not be provided for students under instruction.

F. Transportation. The cost of travel in connection with the subject course shall be charged to the local station maintenance and operation allotment. Bureau of Medicine and Surgery managed activities will charge to the appropriation, Medical Care, Navy. Activities not under the management control of the Bureau of Medicine and Surgery will initially finance the travel from appropriate management bureau funds with subsequent reimbursement by the Bureau of Medicine and Surgery in accordance with NavComp Instruction 7310.5 of 29 May 1956.

Request for this course should be made to the Commandant of the Naval District in which the officer resides. (SPWDEF Div, BuMed)

Note: Officers not residing in the above Naval Districts are scheduled to attend the Special Weapons Orientation Course provided by the Fleet Training Center, San Diego, Calif. Commander Training Command, U.S. Pacific Fleet controls all quotas to this school. Request for this school should be made to the Commandant of the Naval District in which the officer resides.

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Operation Deep Freeze

The Navy's support of the Antarctic Expedition will be continued through next year as Operation Deep Freeze III. A limited number of Medical officers will be selected for this unusual assignment. Applications for this duty are invited from Medical officers under the grade of Captain. Officers selected will be ordered to the Naval Construction Battalion Center, Davisville, R.I., during the spring or early summer for special training until the expedition sails in the fall. The expedition will remain in the Antarctic over the long winter night and will return to the United States early in 1959. See AlNav 68-56 for details. (ProfDiv, BuMed)

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The printing of this publication has been approved by the Director of the Bureau of the Budget, 16 May 1955.

DENTAL SECTION

Precious Metal Scrap from Filters of Polishing Lathes

Some dental facilities have forwarded the Dust-Stop Filters from the Handler Model Dental Laboratory Grinding and Polishing Machine to the supply depots for recovery of precious metals. This is unnecessary and creates excessive shipping costs.

The manufacturers recommend the following simple method to extract precious metal from the filters: "After removal of the Dust-Stop-Filter from the grinding and polishing machine is accomplished, hold the filter at the two corners closest to you with the label facing you. With a piece of paper underneath to catch the residue, tap the edge farthest away from you on something solid. Rotate and repeat this procedure until all four sides have been tapped out. Repeat this procedure as necessary. The time interval will depend upon operating conditions. Filters normally will not need to be replaced prior to 9 to 12 months' use."

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Regular Navy Dental Officers at Navy and Marine Corps Activities

A review of duty stations of newly appointed Regular Navy Dental officers shows that, while only approximately 18% of all active duty Dental officers were serving at Marine Corps activities, 21% of newly appointed officers were serving at Marine activities at the time they applied for appointment in the Regular Navy Dental Corps. This study included officers appointed 15 September 1956 to 15 February 1957.

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Dental Notes

Dental Reserve matters, in the past, have been carried in the Dental Section as occasional items. In the future, such items will appear in the Reserve Section.

The Dental Training Committee convened on 6 March 1957 in the Dental Division, Bureau of Medicine and Surgery, for the purpose of selecting Dental officers for training during fiscal year 1958. Officers submitting requests to participate in the Dental Training Program for fiscal year 1958 will be notified in March as to action taken on their requests.

Examinations for Certification by the American Board of Prosthodontics will be held at the School of Dentistry, Medical College of Virginia, Richmond, Va., 24 - 29 June 1957.

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Repair School Applications No Longer Desired

Sufficient applications have been approved to fill all available billets in the Class "C" Dental Repair School at the U.S. Naval Dental School, National Naval Medical Center, Bethesda, Md., for the balance of the calendar year. No additional applications will be considered until notification is made for submission of applications at a later date.

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RESERVE SECTION

NOTICE

This Section which heretofore contained items of general interest to inactive Reserve Medical, Medical Service, Nurse, and Hospital Corps personnel has been enlarged to include information for inactive Reserve Dental Department personnel.. Instead of the title Medical Reserve Section it will now be known as the Reserve Section. Accordingly, all inactive Reserve Dental personnel are urged to regularly refer to this Section for matters pertaining to the Reserve Dental Program.

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How Can I be Promoted in the Naval Reserve?

This is the subject of many letters received in the Bureau of Medicine and Surgery from inactive Reserve Medical Department officers. In case

you are wondering about your eligibility for promotion to the next higher rank, here is the answer:

Inactive Naval Reserve officers become eligible for selection and ultimate promotion by establishing their professional fitness through the earning of the necessary number of promotion points each year that they serve in grade. To qualify for consideration by a selection board, Reserve officers must earn a minimum of 12 promotion points per fiscal year. To qualify for selection and promotion, Reserve officers must earn a minimum of 24 promotion points each year in grade with a maximum not to exceed 144. Promotion points may be earned as follows:

1. Completion of appropriate correspondence courses
2. Participation in inactive duty and active duty for training

Twelve promotion points will be awarded for whichever of the following phases is completed first during any fiscal year:

1. Attendance at 75% of the prescribed drills of your unit
2. Satisfactory completion of fourteen days active duty for training
3. Satisfactory completion of at least fourteen periods of appropriate duty

Promotion points will not be awarded for completion of more than one of these three phases in any one fiscal year:

1. Extended active duty. One promotion point being awarded for each month of continuous active duty served
2. Completion of each course in which enrolled in NROS
3. Satisfactory completion of other approved training or instruction with the number of promotion points evaluated or assigned by the Chief of Naval Personnel

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Available Correspondence Courses

Medical Department Orientation - NavPers 10943-A (New-1956)

Recommended to all Medical Department personnel, this course is designed to acquaint the enrollee with the responsibilities, functions, and facilities of the Navy Medical and Dental services. It provides instruction in the application of professional abilities and practices to Navy requirements.

Course material includes the history of the development of the Medical Department; organization and growth of the Bureau of Medicine and Surgery; detailed information on the organization, facilities and services of the National Naval Medical Center, naval hospitals, hospital ships, infirmaries, station hospitals, dispensaries, and field and mobile hospitals.

The course consists of two objective question type assignments. It carries six Naval Reserve promotion points and six non-disability retirement points. Naval Reserve personnel who have satisfactorily completed course NavPers 10943 and have received credit for it may enroll in course NavPers 10943-A and will receive credit for this course upon satisfactory completion. A completely revised text, NavPers 10816-A, serves as the basis for the course.

Pharmacy and Materia Medica - NavPers 10999

Recommended for all Medical Department personnel, this course is aimed to supplement the information of Medical Department personnel in the fields of pharmacy, materia medica, and toxicology. The course does not pretend to offer intensive or exhaustive study in any of these fields, but does provide personnel with a broad understanding of them and gives information about standard procedures.

Course material includes information about pharmaceutical procedures, pharmaceutical arithmetic, prescriptions, and preparations. One section deals with the origin, composition, and properties of medicinal substances. The course also embraces such subjects as pharmacognosy, pharmacy, pharmaceutical chemistry, pharmacology, therapeutics, posology, and toxicology.

This course will be found especially useful by physicians, pharmacy and chemistry technicians, Hospital Corps watch standing personnel and personnel considering requesting a course of instruction in pharmacy technique.

The course consists of eight objective question type assignments. Satisfactory completion of the course will entitle eligible Naval Reserve personnel to 24 non-disability retirement credit points and 24 promotion points. Pharmacy and Materia Medica, NavPers 10817, is used as a text.

Atomic Medicine - NavPers 10701-A (1955 Edition)

Recommended for All Officers of the Medical Department, this course is designed to enable officers in the medical, dental and allied professions to improve their understanding of the medical problems arising from the use of atomic energy.

Course material consists of relevant information which has been brought together from the fields of nuclear physics, physical chemistry, radiation biology and therapy; the attempt has been made to present the material as clearly as possible, and to steer a middle course between a presentation suitable only to specialists in the fields of radiation biology and physics and one unduly elementary. Subjects considered include the physics of atomic fission, atomic piles, and atomic bombs; the nature, biology, pathologic

effects, and detection of ionizing radiations; atomic disaster planning, and measures to promote radiologic safety; and the nature of radioisotopes and their application to medical purposes in practice and research. The course consists of eight objective question type assignments.

Upon satisfactory completion of the course, eligible Naval Reserve personnel will receive 24 promotion credit points and the same number of non-disability retirement points. Naval Reserve personnel who previously completed the correspondence course Radiological Defense and Atomic Medicine will receive additional credit for the completion of course NavPers 10701-A.

The text for the course is Atomic Medicine, second edition, edited by C. F. Behrens and published by the Williams and Wilkins Company. Supplementary reading material is provided in OpNav Instruction 3441.1A. This provides information about Navy policy regarding exposure of personnel to nuclear radiation. However, No examination questions are based on this material.

Note: Eligible Medical and Dental Department personnel may be enrolled in more than one Medical or Dental Department correspondence course at one time. Additional correspondence courses on various Medical Department subjects are available and complete lists can be obtained by writing the Commanding Officer, U.S. Naval Medical School, or U.S. Naval Dental School, National Naval Medical Center, Bethesda 14, Md., as appropriate. Medical Department personnel (other than Dental Department personnel) address applications for courses to the Commanding Officer, U.S. Naval Medical School. Dental Department personnel submit their applications to the Commanding Officer, U.S. Naval Dental School.

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Dental Company Activated

Captain Dale McKee DC USN, District Dental Officer, and Captain I. Edward Brenner DC USNR, District Reserve Program Officer of the Sixth Naval District; and Captain C. M. Wheeler DC USNR, Head of the Dental Reserve Branch, Dental Division, Bureau of Medicine and Surgery, will visit the University of Alabama Dental School, Birmingham, Ala., in March, for the purpose of activating a Dental Company at the school. These officers will then visit other Dental Companies and appropriate duty officers in Atlanta, Ga., Memphis, Tenn., and Chattanooga, Tenn., to discuss Navy Reserve and career matters.

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PREVENTIVE MEDICINE SECTION

Preventive Medicine Notes

Pertinent portions of Preventive Medicine Notes for Surgeon General's Symposium, representing highlights of current concern or activity of the Preventive Medicine Division, are being reproduced as of general interest to those medical officers who have not had access to a copy of the handout material.

Preventive Medicine Units

In June 1956, a SecNav Notice redefined the missions of Preventive Medicine Units, disestablished the Units at Camp Lejeune and Great Lakes, and established Preventive Medicine Unit #7 at Naples. BuMed Inst 6200. 3 is undergoing revision to reflect these changes and to increase further the effectiveness of the Units.

Tuberculosis Control

Tuberculin Testing of Certain Personnel

In a previous study in 1949, the incidence rate for tuberculosis among Hospital Corpsmen was almost twice that of the rest of the naval population. In order to afford better protection for Medical Department personnel, it was deemed advisable that tuberculin tests be made on all those under the age of 35 who are assigned to duty in naval hospitals and whose records contain no report of a prior positive tuberculin reaction since entering the naval service. If the tuberculin reaction is found to be negative, retesting is done at yearly intervals, or if assigned to a service treating tuberculosis cases, retesting is done at three-month intervals while assigned to such service. For those individuals whose tuberculin test becomes positive while in such service, arrangements are made for appropriate physical and laboratory examinations, and for continued medical observation for at least two years.

Even though the conversion rate for Medical Department personnel appears to be comparatively low, it is considered advisable to continue the search for unknown cases of tuberculosis. Vigilance can be facilitated by

the routine chest examinations of every hospital admission by the photofluorographic method and also by the continued periodic retesting of those negative reactors who by virtue of their duties are caring for potentially active tuberculosis patients.

Personnel

Over all reductions in personnel have resulted in some curtailment in the training of medical officers in the technique and interpretation of photofluorography. As a result, many of these officers trained in photofluorography are reading films for more than one activity in an area and some of the smaller activities do not have trained personnel reading their films. This sometimes results in diminished quality of films and decreased effectiveness in the screening process as well as delay in reporting suspected cases.

Where no roentgenologists or doctors trained in x-ray are available, it is recommended that medical officers of the Regular Navy and Naval Reserve be encouraged to apply for the three months' course in photofluorographic interpretation given at the U.S. Naval Medical School, National Naval Medical Center, Bethesda, Md. This course serves as a background for further training in internal medicine, diseases of the chest, and radiology.

Interested medical officers should submit an official request to the Bureau of Medicine and Surgery, attention Code 7212, for consideration. No service agreement is required. Reserve Medical officers are eligible for this training provided they will have at least one year of obligated service remaining upon completion of their instruction (Refer to U.S. Navy Medical News Letter, Volume 26, Number 11 of 9 December 1955).

Photofluorographic Units

A mobile photofluorographic unit is assigned to each naval district under the operational control of the commandant to assist all small stations, ships, and activities without photofluorographic units to accomplish annual periodic and any other necessary chest x-ray surveys. An itinerary is usually scheduled each year in advance.

A transportable photofluorographic unit is attached to the Fourteenth Naval District and, recently, a transportable photofluorographic unit has been attached to the Naval Hospital at Yokosuka, Japan, and is now in operation. A photofluorographic unit has also been approved and procured for use at Naples, Italy, and should be in operation shortly.

Vector Control

Standards for Control Operation

Since World War II, the complexity of insect and rodent control technology has increased manifold, a development which required the utilization of highly trained personnel if man and his possessions are to be effectively

and safely protected. To insure that such is the case on military installations, Bureau of Medicine and Surgery in cooperation with other branches of the Armed Services has aided in the development and promulgation through DOD channels of minimal standards for military insect and rodent control operations.

A key requirement of these new standards is that all such work must be accomplished by, or under the supervision of, personnel of certified proficiency. Accomplishment of this certification is the problem now facing the Navy. BuMed, in its traditional role of providing training in matters affecting health and welfare, is making available its facilities to provide an advanced training course in disease vector and pest control at its management activity, the Navy Disease Vector Control Center, Naval Air Station, Jacksonville, Fla. It is expected that availability of this specialized training will do much to insure a more effective and productive Navy vector and pest control program.

Control Operations Aboard Ships

As the new broadened Navy program in pest control has developed, it has become apparent that an area of responsibility for which insufficient provision has been made is that relating to the control of insects and rodents aboard Navy vessels. This problem does not appropriately fit within the economic pest control program of BuDocks, nor too logically within the vector control program of BuMed. However, since the work is most commonly accomplished, or at least supervised, by the Medical Department personnel, it has appeared necessary to accept it as a responsibility of the Medical Department.

In order to determine the magnitude and importance of pest control aboard vessels, it was arranged a year ago to have the U.S. Navy Preventive Medicine Unit No. 6, Pearl Harbor, conduct a survey of conditions aboard representative ships operating in that area. With the cooperation of ComServPac, this survey was accomplished. From the survey, it has been determined that a relatively high percentage of naval vessels do have insect and rodent problems of sufficient importance to require the accomplishment of control procedures. It was further determined that the principal reason for lack of adequate pest control aboard ships was the absence in most cases of adequately trained personnel and, secondarily, the lack of the necessary equipment and materials.

On the basis of this survey, recommendations were made that a short training course in pest control should be given to each individual charged with this responsibility aboard ship and that standard ships' allowance lists for pest control items should be established. These recommendations were concurred in by ComServPac and forwarded for appropriate bureau action. At present, BuMed is engaged in establishing a one-day shipboard pest control training course at each of the Navy's Preventive Medicine Units.

A training syllabus has been prepared for this course and plans are under way to prepare a suitable training film. Provided that commanding officers of vessels make the fullest possible use of this training, it is believed that the present unsatisfactory situation should be considerably improved. Suggested minimal ships' allowance lists of pest control items have been forwarded to BuShips and are presently under consideration there.

Control Problems at Naval Hospitals

It is felt that a two-part problem continues to exist regarding the pest control program in naval hospitals. The first aspect of this problem is technical in nature. In naval hospitals, certain specialized situations occur which render the elimination of noxious insects extremely difficult. For example, there are spaces which can seldom or never be completely evacuated, such as spaces occupied by infants; and there are areas where the better insecticides cannot be used because of toxicity hazards, such as diet kitchens and operating rooms. Also, dependents' wards often constitute a special problem because of the difficulty of assuring full compliance with normal sanitation procedures. To add to this problem, cockroaches are now rather generally resistant to the better pesticide materials. The second aspect of this general problem is an administrative one and involves the question of where and by whom within the administrative organization is the work to be accomplished.

In an effort to provide guidance in the realization of a logical administration of the pest control problem, BuMed Inst 6250.5 was issued in July 1956. This instruction promulgates to all BuMed managed activities the procedures necessary to effect compliance with DOD pest control standards established in 1955 by DOD Inst 4150.7. The new BuMed Instruction states that a scheduled preventive program of insect and rodent control is to be conducted as a part of activity controlled maintenance. It is believed that placement of all pest control services in one place within the maintenance department will make it economically possible to add to the staff a full time civilian pest control operator, and to do away with the present expensive and often ineffective system of accomplishing pest control from a number of offices. At present, it is frequently the custom to use contractual services for structural pest control, hospital corpsmen, or similar personnel for accomplishing the control of vector species and gardeners for the control of the pests of ornamental plants and of grounds. Considered in this manner, it can be seen that there is a large and very useful service which can be rendered if all of these functions are combined into one office and one which certainly would occupy the full time of a pest control operator attached to the maintenance department. By so doing, not only would a more effective program result, but also a safer and more economical one.

It is believed that a solution of the administrative problems involved will be realized as compliance with BuMed Inst 6250.5 is accomplished.

The technical problems mentioned earlier remain unsolved and should be made the subject of a special study by the Disease Vector Control Center, Jacksonville, Fla., or by some equivalent agency.

Environmental Sanitation

Milk and Milk Products

BuMed Inst 6240.2 has been revised as a proposed SecNav Instruction to reflect changes recommended by field activities and to conform with the Public Health Service Milk Ordinance and Code, Federal Specifications, and Military Standards. Primarily, this instruction promotes the following high health protection standards for milk and milk products:

1. Restricts contracts and purchases to Army-approved sources or clearance by a qualified inspector prior to awarding contracts or purchase orders.
2. Specifically requires compliance by all food establishments including clubs, cafeterias, and snack bars as well as appropriated-fund messes.
3. Defines individual service, refrigerated bulk milk dispensers, single-service container, and multi-service containers.
4. Prohibits use of certain types of bulk milk dispensers aboard ships.
5. Prohibits use of milk or milk products including whole fresh milk, milk concentrate, and dry milk solids for cold beverage purposes (served at temperatures of less than 150° F.) except those provided in the individual original container in which it was received from the distributor or dispensed from a refrigerated bulk milk dispenser.

Bulk Milk Dispensers for Shipboard Use

A special refrigerated bulk milk dispenser for shipboard use began operational tests in March 1957 to determine its usefulness. This unit promises to be capable of dispensing whole fresh milk from Norris-type cans or 5-gallon disposable tins. In addition, it will reconstitute and dispense refrigerated or frozen concentrated milk and/or concentrated fruit juices from a variety of containers.

Drinking Water Standards

Water handling and purification practices aboard ship have been under study by BuMed and BuShips for the purpose of implementing a recent DOD directive which requires the standards for water used for drinking and culinary purposes in the Armed Forces to be those promulgated by the U.S. Public Health Service. Among other things, implementation will prohibit

routine batch chlorination, but will provide an automatic hypochlorinator operable at variable rates of flow.

The National Academy of Sciences, National Research Council, has recommended concurrently that free chlorine residuals be standardized afloat and ashore dependent upon the specific purposes as follows:

Bactericidal—0.2 ppm minimum free chlorine residual
After 30-minute contact period, pH 6.0 to 9.2
Water temperature 0° - 25° C.

Cysticidal, virucidal—2.-ppm minimum free chlorine residual
After 30-minute contact period, pH 5.6 to 6.6
Water temperature 22° - 25° C.

Items of Sanitary Significance

A triservice policy which will provide medical "acceptance" to items of equipment, devices, or processes which bear significance to sanitation is expected to be established in the near future. Such acceptance will be based upon the presentation of documentary evidence which shows that the item, device, or process compares favorably with the requirements of an appropriate standard of the U.S. Public Health Service. The first phase of this program will originate at departmental level and will apply largely to equipment developed for military use.

Garbage Grinders

Garbage grinder units aboard naval vessels have been shown in some cases capable of creating a health hazard when they are operated in food-service spaces or sculleries if salt water from polluted or crowded anchorages is used for flushing purposes while the unit is grinding garbage. A resultant salt water aerosol may escape from the grinder body into the compartment which would be capable of contaminating exposed foods or food-contact surfaces. To reduce this hazard, BuShips Inst 9360.11 requires substitution of fresh water for salt water flushing or removal of grinder disposal units to a location remote to food-service spaces, including sculleries.

Fluoridation

DOD Inst 6230.2 of 30 August 1956 cites DOD policy concerning adjustment of fluoride content of communal water supplies at military installations and promulgates general procedural guidelines for use in developing and evaluating fluoridation and defluoridation projects. The technical problems

involved in the issuance of a joint BuMed/BuDocks Instruction in implementation of the DOD directive are being solved as expeditiously as possible and early publication is anticipated.

Occupational Health

Occupational Health Program

The Navy's Occupational Health Program has been intensified and closely coordinated with operations of the fleet and shore establishments, particularly as it applies to health hazards arising from occupational exposures that may adversely affect health. The services of the program have been extended to units of the forces afloat through two industrial hygiene officers presently attached to work out of Preventive Medicine Units in Norfolk, Va., and Pearl Harbor, T.H. In addition, a pilot study is under way in the San Francisco Bay Area through the office of the Inspector, Naval Medical Activities, Pacific Coast, in an effort to determine if a more formalized occupational health program is indicated aboard ships of various types.

Some major phases in industrial health being emphasized are the problems of noise, protection against radioactive substances, toxicity of triaryl phosphate hydraulic fluids for use aboard aircraft carriers, and toxicity of chlorinated diphenyl hydraulic fluids for use in submarines. Emphasis has been placed on procuring urgently needed toxicity data based on prolonged exposures to a host of materials at low concnetrations.

Triservice Policies

As an aid to the joint utilization of industrial hygiene services, the Armed Forces Index of Occupational Health Methods and Equipment, prepared under the auspices of the National Academy of Sciences, National Research Council, Committee on Toxicology, has been sent to various military field activities.

Personnel

There is currently a shortage of trained junior medical officers in the field of occupational medicine. There is a need for a minimum of two junior medical officers per year to begin qualifying for certification in occupational medicine. Only one is in training at this time. Various media are being used to recruit medical officers and medical service corps officers for special training in occupational medicine and industrial hygiene engineering.

Several senior medical officers have been certified by the American Board of Preventive Medicine as specialists in occupational medicine.

There are 79 civilian physicians now employed in various naval field activities in connection with the occupational health program. There are

still some areas where it is not possible to obtain the services of civilian physicians. This latter condition may have been relieved somewhat had the question of dual compensation for retired federal physicians been favorably considered.

Professional Literature Program

Quarterly statistical reports with an annual summary on Occupational Health in the Navy and Marine Corps are being published in the Journal, Statistics of Navy Medicine.

A paper on Occupational Health in the Navy and Marine Corps has been published in the American Medical Association Archives of Industrial Health, December 1956.

A chapter on Ventilation and Thermal Stress Ashore and Afloat is contained in the Manual of Naval Preventive Medicine (NavMed P-5010-3).

Current Projects

SecNav 6260.3, Uniform labeling program for hazardous industrial chemicals and materials of 24 September 1956 was directed to various naval bureaus and offices for implementing instructions.

BuMed Inst 6150.10, Civil Service Employees' Medical Record Jacket; Standardization of in the Naval Establishment, was completed and promulgated to all stations having medical personnel regularly assigned on 27 September 1956.

NavMed Form 576 is being revised and an instruction on methods of completing the newly revised form is being prepared.

The quarterly release, Occupational Health Hazards, continues to distribute pertinent information to naval industrial type activities.

The Thermal Stress Section of the Industrial Health Branch is concerned with problems of excessive heat or cold as they may affect military personnel. The Section has close liaison with Operation Deep Freeze on the effects of cold weather operations on personnel. Studies are also being made in areas where intensive heat may be a problem.

Toxicology

Several important steps have been taken during the past year to expedite the evaluation of new materials with toxic potentials:

SecNav Inst 6260.2, Potentially Toxic Materials; precautions against, of 7 November 1955, provides the mechanism to be followed by bureaus sponsoring research and development of new materials and new processes in which toxic potentials are involved. It spells out the role of BuMed at the various stages of development; i.e., laboratory stage, pilot plant stage, and

service-wide usage phase. This program has been very effective with BuShip's problems and is gradually being implemented by other bureaus.

A Toxicological Information Center has been established under the Committee on Toxicology of the National Research Council. The start of active operations was delayed pending the employment of a "top-notch" toxicologist who would act as executive secretary and who would serve as coordinator of this new Center. Dr. Harry W. Hays, formerly of Wayne University, Ind., assumed his duties as head of the Center on 15 January 1957. The Toxicological Information Center is supported by the three services and the Atomic Energy Commission. It is anticipated that the Center will greatly facilitate the obtainment of toxicological information and opinions on new materials where no information exists in the literature.

Closer liaison has been obtained between BuMed's Preventive Medicine and Research Divisions through an additional duty assignment of the Head, Industrial Hygiene Section, to Head, Toxicology Section for the Research Division. This has served to coordinate the operational and research problems involved in the use of toxic materials.

Finally, this year has seen the entrance of the Naval Medical Research Institute, National Naval Medical Center, Bethesda, Md., into research on toxicity of two organic phosphate hydraulic fluids. This work was of a "crash" nature and nowhere else could this work have been accomplished in so short a time, in such an outstanding manner, and at a minimum cost. Evidence of this appreciation is a letter of Commendation sent by the Chief, Bureau of Ships to the Commanding Officer, Naval Medical Research Institute.

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Poliomyelitis Vaccine

Poliomyelitis vaccine has been available for unrestricted usage in military personnel and dependents since last fall. While not mandatory, its administration has been especially urged for those in, or destined for, hyperendemic or epidemic areas. Because military orders do not often provide the 8 months notice required to achieve maximum protection for a man or his family prior to arrival in such an area, all persons who may be subject to move into the hyperendemic areas of the world should be urged to have the vaccine as soon as possible. This is particularly true if children are in the family.

A case in point is highlighted by a dispatch received from the Philippines in February which reads in part: "BU2 . . . USN. Poliomyelitis, anterior, acute, spinal, both lower extremities and back. Incapacitated. Prognosis for life excellent, for walking undetermined."

The incapacitation and possible loss of this valuable petty officer is tragic both for the individual and the Navy. Could it have been prevented if he had two doses of poliomyelitis vaccine? Probably. Three doses? Almost certainly. Where was the failure? Was it due to the fact that the Medical

Department of the Navy has not organized an adequate program for selling the vaccine? We hope not.

A forthcoming revision of the BuMed Instruction on Poliomyelitis Vaccine will cite the Department of Defense policy for a voluntary immunization program for military personnel. The subject of a general mandatory immunization program has been discussed at length by representatives of the three medical military departments and of the Office of the Assistant Secretary of Defense (Health and Medical). The reasons why such a program is not considered feasible or desirable at the present time are too involved to be reviewed here. Suffice it to say that there has been general agreement that consideration of a mandatory program should be deferred until more information was available on the effects of the current voluntary program on poliomyelitis in military personnel and as to whether booster doses would be required.

This decision against a mandatory program in no way relieves the medical department of any responsibility for a positive program which insures that all military personnel have been advised to take the vaccine and have had an opportunity to have it. Supplies are adequate and all ships and stations having a medical department can procure the vaccine for all military personnel and dependents for which they are responsible.

Medical officers should not be confused by civilian programs offering free vaccine to persons under age 20 and to pregnant women. This applies only to vaccine purchased with Federal appropriations which restricted usage of vaccine so purchased to these groups. The over all civilian program is to have everyone under age 40 immunized this year. Because of the special hazards in overseas areas or of movement of personnel into areas where epidemics may be occurring, the Bureau has not seen fit to recommend any such age restriction. (Captain John R. Seal MC USN, PrevMedDiv, BuMed)

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